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PATENT APPLICATION

Docket No. 15689.49.1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of)
)
	Takehiro Nakamura et al.)
)
Serial No.:	10/673,683) Art Unit
) 2611
Filed:	September 29, 2003)
)
Conf. No.:	4169)
)
For:	BASE STATION IN MOBILE)
	COMMUNICATION SYSTEM)
)
Examiner:	Kevin Kim)
)
Customer No.:	022913)

REPLY BRIEF FOR APPELLANT

VIA eFILE

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Sir:

An Examiner's Answer was mailed in this case on July 21, 2010. This Reply Brief is being timely filed in response to the Examiner's Answer pursuant to 37 CFR § 41.41. Appellant continues to appeal the rejection of claims 5–10.

STATUS OF THE CLAIMS

Claims 1–4 have been cancelled and are no longer pending.

Claims 5–10 stand rejected by the Examiner.

The rejection of claims 5–10 is being appealed.

ARGUMENT

A. Introduction

Independent claims 7 and 9, now under appeal, both recite the limitation “that a ratio of the number of the pilot symbols to the total number of symbols in a single slot of the signal becomes smaller in a case where a transmission rate of the signal is high, than that in a case where the transmission rate is low.” The Examiner concedes that Marchetto fails to teach this limitation. Examiner’s Answer p. 4.

The Examiner asserts that Hassan col. 4 ll. 48–64 “teaches that an appropriate (in other words, optimal) number of pilot symbols should be selected for reducing the bit error rate and, at the same time, the overhead.” Examiner’s Answer p. 4. The Examiner also asserts that “[i]t is quite established that it is desirable to minimize the number of pilot symbols (which carries no user information) in order to reduce overhead.”¹ Examiner’s Answer p. 4. The Examiner concludes that “[t]hus, when a same number of pilot symbols is used for high and low transmission rates, the ratio of the optimized number of pilot symbols to the total number of symbols . . . would have been smaller when the transmission rate is higher.” Examiner’s Answer p. 4.

The Applicants note that the Examiner states a premise (i.e., “*when* a same number of pilot symbols is used for high and low transmission rates”) and a conclusion (i.e., “[*then*] the ratio of the optimized number of pilot symbols to the total number of symbols . . . would have been smaller when the transmission rate is higher”). However, the Examiner’s premise is not true (i.e., a same number of pilot symbols is not used for high and low transmission rates) and therefore the Examiner’s conclusion is not valid.

As was asserted in the Appeal Brief filed April 16, 2010, the Examiner’s assumption that the number of pilot symbols is fixed (i.e., “a same number of pilot symbols is used for high and low

¹ The Applicants note that “[i]t is quite established that it is desirable to minimize the number of pilot symbols . . .” would seem to imply the Office is taking Official Notice. The Applicants dispute that minimizing the number of pilot symbols is so established. For instance, Hassan col. 4 ll. 48–64, cited by the Examiner, discusses competing considerations for selecting a larger or smaller number of pilot symbols: “pilot symbols may be inserted in the symbol sequence at a smaller intervals to . . . increase the accuracy of the estimated channel transfer characteristic. . . . however, increasing the frequency of pilot symbols in the transmitted symbol sequence can reduce the potential information capacity of the channel.” Hassan col. 4 ll. 48–64. Thus, a minimum number of symbols is not “quite established” but, to the contrary, the desired number of pilot symbols may, in fact, depend on the considerations of a particular situation – more symbols when increased accuracy is desired (at the expense of capacity) but fewer symbols when increased capacity is desired (at the expense of accuracy).

transmission rate”; Final Office Action p. 4 (paper no. 20090803, mailed Aug. 4, 2009) (“FOA”) is an impermissible presumption and, further, is incorrect.

B. It is incorrect to assume that a fixed number (i.e., “a same number”) of pilot symbols is used for high and low transmission rates.

Firstly, it is incorrect to assume that a fixed number (i.e., “a same number”) of pilot symbols is used for high and low transmission rates. As stated in Specification § 4.1.2.3, “Signal Formats of the Physical Channels,” “[t]he optimal numbers of pilot symbols per time slot *varies* depending on the symbol rates.” See Specification ¶¶ 0228–229 (emphasis added). Therefore, the optimal numbers of pilot symbols cannot be said to be fixed (i.e., “a same number . . . for high and low transmission rates”). In the Examiner’s Answer, the Examiner could not refute (and did not dispute) that the number of pilot symbols was not fixed.

Because the number of pilot symbols is not fixed, the Examiner’s conclusion that the ratio becomes smaller for higher transmission rates does not follow. Therefore, there would be no basis for concluding that “the ratio of the optimized number of pilot symbols to the total number of symbols . . . would have been smaller when the transmission rate is higher.” Examiner’s Answer p. 4.

C. The premise that “a same number of pilot symbols is used for high and low transmission rates” is based on impermissible speculation.

The rejections of record and the Examiner’s Answer are not based on the facts but are based upon impermissible speculation, and thus, should not be admitted. See *Ex Parte Peter Sailer et al*, Appeal 2008-2041, pp. 7–8 (BPAI, Aug. 27, 2008) (Examiner’s rejection reversed).

There is no evidence to support the Examiner’s speculation that “a same number of pilot symbols is used for high and low transmission rate.” Examiner’s Answer p. 4. On the contrary, Hassan suggests that the pilot symbols should be inserted at smaller intervals (i.e., an increase in pilot symbols) to increase the accuracy of the estimated channel transfer characteristic and that the frequency of pilot symbols should be reduced (i.e., a decrease in pilot symbols) to increase the potential information capacity of the channel. See Hassan col. 4, ll. 48–64. If the Examiner’s analysis is correct, Hassan suggests that an appropriate (optimal) number of pilot symbols should be

determined in view of the accuracy of the estimated channel transfer characteristic and the potential information capacity of the channel. As just described, Hassan discloses that the number of pilot symbols should not be fixed (i.e., “a same number”) but, accordingly, the optimal number of pilot symbols would change when either the accuracy of the estimated channel transfer characteristic or the potential information capacity of the channel were to change.

The Examiner asserted that an “obvious to try” test was not the basis for rejections; Examiner’s Answer p. 6; but the Examiner does defend an “obvious to try” test. *See* Examiner’s Answer p. 6. However, since the optimal number of pilot symbols per time slot is not fixed but varies depending on the symbol rates (transmission rates); *see* Specification ¶ 00229; the tendency of the ratios of the number of pilot symbols to the total number of symbols as to the symbol rates *cannot be predictable*. Accordingly, there were not “a finite number of identified, predictable solutions, with a reasonable expectation of success” and therefore the obvious-to-try rejection is also insufficient.

D. The Office provided an inconsistent analysis of Hassan and those having ordinary skill in the art would not read Hassan as teaching the claimed limitations.

The Examiner disputed that the “obvious to try” test was applied and explained that “the examiner actually relied on a common engineering principle of optimization, *leading to the conclusion that a higher transmission rate would require a higher ratio of pilot symbols to total symbols.*” Examiner’s Answer p. 6 (emphasis added).

The Applicants note that this conclusion – “a higher transmission rate would require a higher ratio of pilot symbols to total symbols” – is inconsistent with the Examiner’s previous assertion that “the ratio of the optimized number of pilot symbols to the total number of symbols . . . would have been smaller when the transmission rate is higher.” Examiner’s Answer p. 4. Notably, if true, this conclusion would certainly not supply the limitation at issue which, in contrast, requires “a ratio of the number of the pilot symbols to the total number of symbols in a single slot of the signal *becomes smaller in a case where a transmission rate of the signal is high*, than that in a case where the transmission rate is low”; *see* claims 7 & 9 (emphasis added).

Accordingly, as discussed throughout, one having ordinary skill in the art would not conclude from Hassan that “a same number of pilot symbols is used for high and low transmission rates;” and

would not conclude that “the ratio of . . . pilot symbols to the total number of symbols . . . would have been smaller when the transmission rate is higher.” Therefore, one having ordinary skill in the art would not have concluded that Hassan teaches the relevant limitation(s).

CONCLUSION

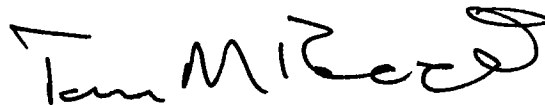
For at least the reasons discussed herein and discussed in the previously filed Appeal Brief, Appellant respectfully submits that the Examiner’s rejections of the claims are unsupported by the facts in the record and that the Examiner’s Answer takes erroneous legal positions as discussed above. Accordingly, Appellant requests that the Board reverse the Examiner’s rejections of Claims 5–10 and issue a Notice of Allowance.

Appellant notes that while not every contention, allegation and characterization of the Examiner set forth in the Final Office Action and/or Examiner’s Answer, or raised at any other time during the prosecution of this case, was specifically addressed herein, the lack of remarks concerning any particular contention, allegation or characterization advanced by the Examiner is not intended, and should not be construed, to constitute an admission or concession by Appellant.

The Commissioner is hereby authorized to charge payment of any of the following fees that may be applicable to this communication, or credit any overpayment, to **Deposit Account No. 23-3178**: (1) any filing fees required under 37 CFR § 1.16; (2) any patent application and reexamination processing fees under 37 CFR § 1.17; and/or (3) any post issuance fees under 37 CFR § 1.20. In addition, if any additional extension of time is required, which has not otherwise been requested, please consider this a petition therefore and charge any additional fees that may be required to **Deposit Account No. 23-3178**.

Dated: September 20, 2010

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Tom M. Bonacci", with a stylized flourish at the end.

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